

Securing Our Transportation Energy Future: The Time is Now

California Energy Commission Workshop

Docket 04-IEP-01-A December, 20, 2004



Advanced Transportation Technologies

Clean Transportation Solutions

John Boesel
President and CEO

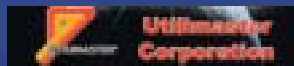


MISSION STATEMENT

WestStart-CALSTART is dedicated to the growth of an advanced transportation technologies industry that will:

- **Create high-quality jobs;**
- **Clean the air;**
- **Reduce dependence on foreign oil; and**
- **Increase energy efficiency**

CALSTART Has 115 Participating Organizations (partial list)

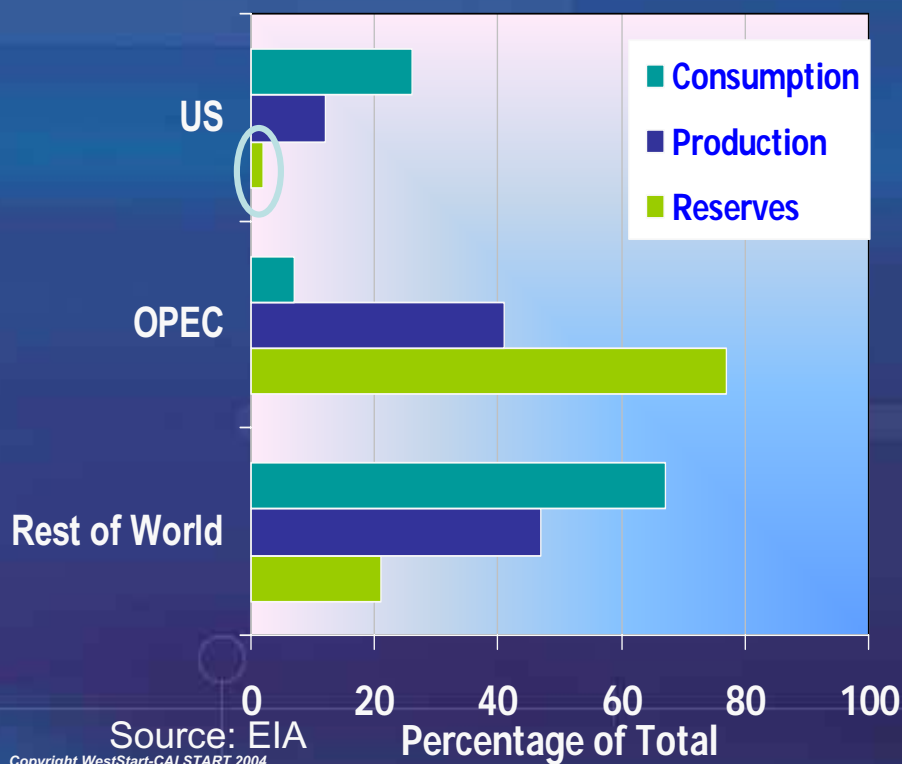




What Hasn't Changed?



Energy Security – The Growing Risk



- Most major U.S. reserves have been drained
- By 2020, OPEC will control 70% of world oil reserves



We Use It But We Don't Have It

64%

Nations that HAVE oil

Saudi Arabia	26.4%
Iraq	11.5%
Kuwait	9.8%
Iran	9.6%
UAE	6.3%
Russia	5.4%
Venezuela	4.7%
Libya	3.0%
China	3.0%
Mexico	2.7%
Nigeria	2.4%
U.S.	2.2%

Nations that NEED oil

U.S.	24.9%
Japan	7.3%
China	6.4%
Germany	3.7%
Russia	3.4%
S. Korea	2.9%
Brazil	2.9%
France	2.7%
India	2.7%
Canada	2.6%
Italy	2.5%
Mexico	2.5%

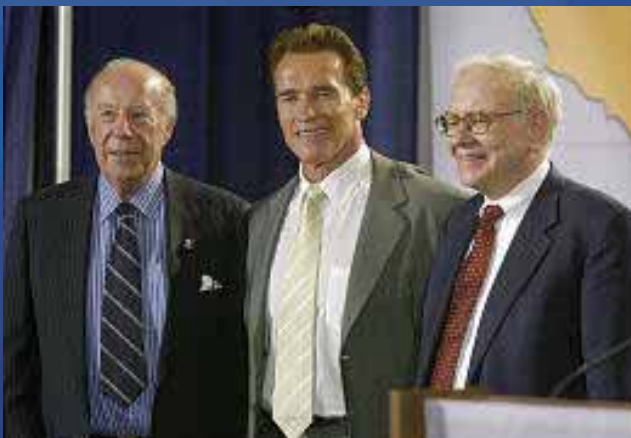
Source: EIA International Petroleum Information,
December 2002. Data for 2000



**The Nations That Have
Significant Future Reserves of Oil
Are Either Unstable,
Undemocratic, Hostile to the U.S.
or Some Combination of the
Above**



George Schultz on U.S. Energy Policy



**Governor Schwarzenegger
with Secretary Schultz and
Warren Buffet**

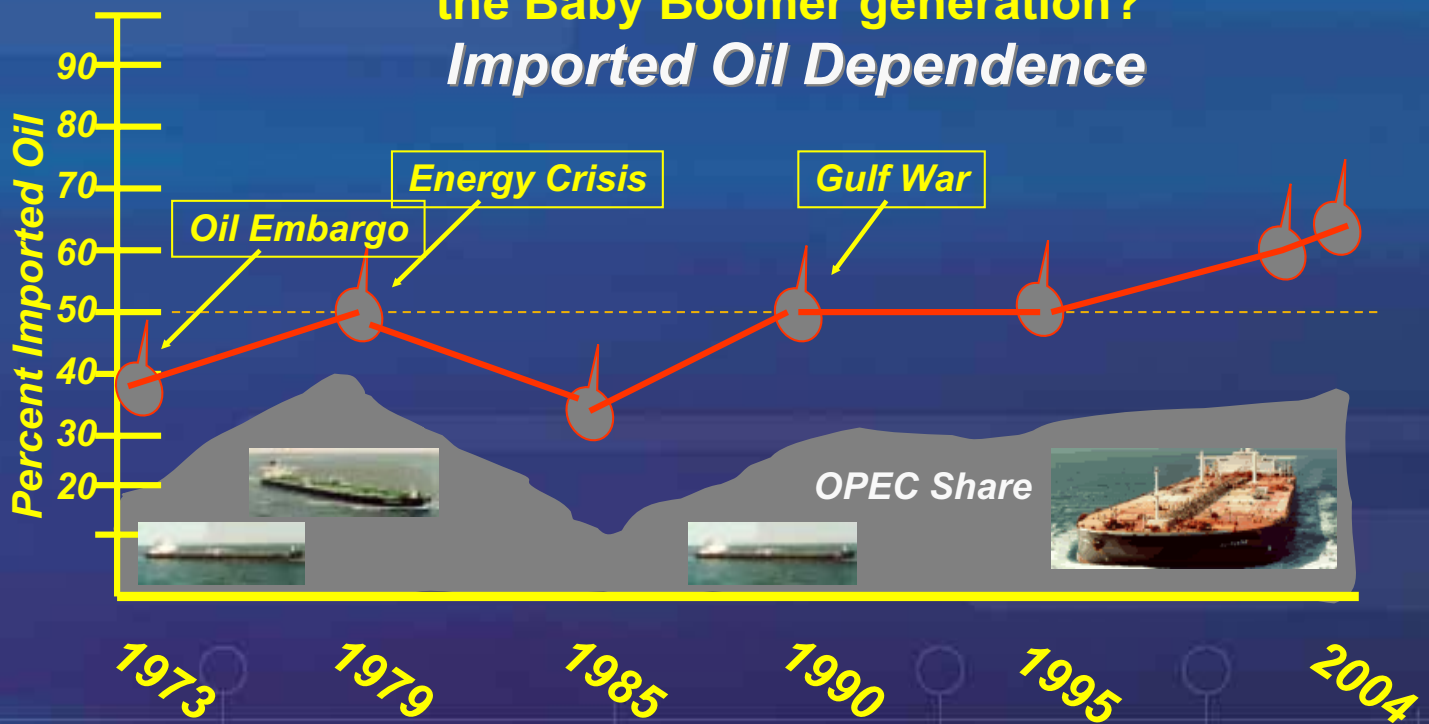
**“How many more times
must we be hit on the
head by a two-by-four
before we do
something decisive
about this acute
problem?”**

Excerpts from
Foreword to “Winning the Oil End
Game” By Lovins, et. Al
October 2004

From 40 to 65% in 31 Years



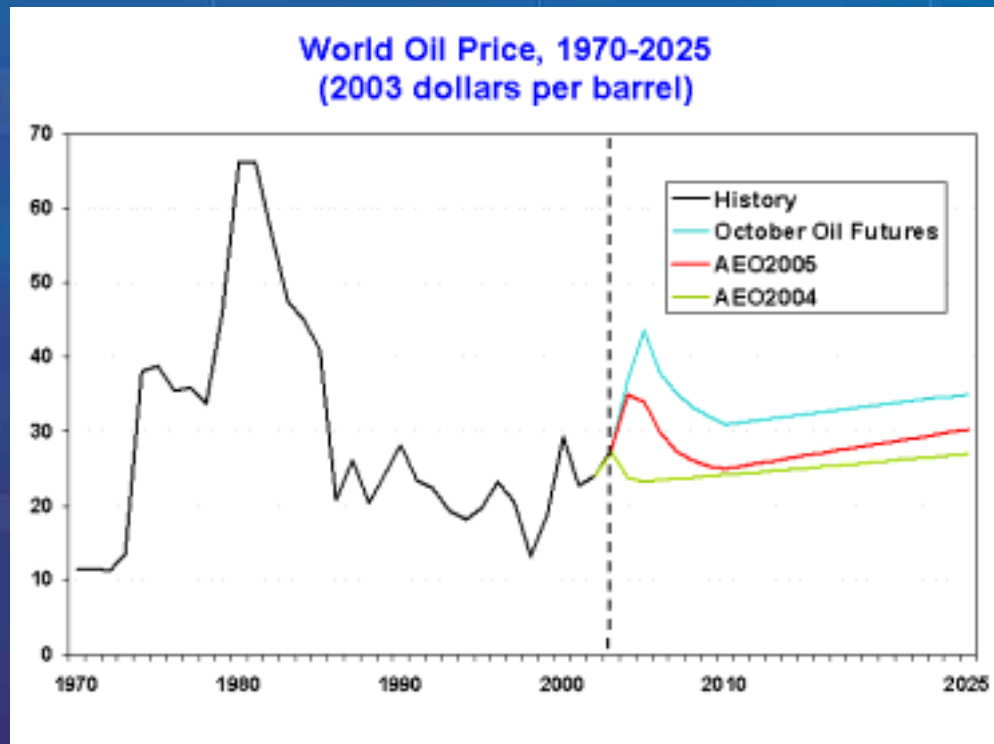
Will this be another legacy of the Baby Boomer generation?
Imported Oil Dependence





Oil Prices Expected to Increase

**Price
Volatility
Trend
Likely to
Continue**

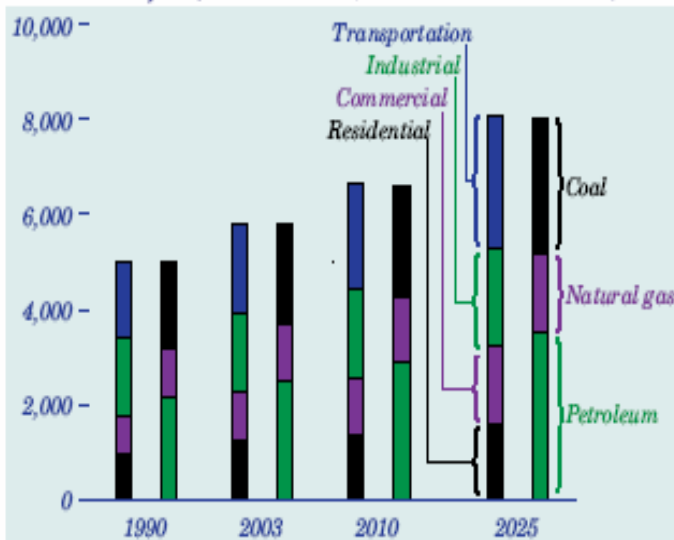


Source: Energy Information Administration

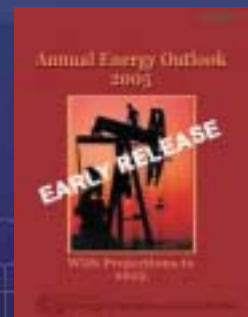


Trend is Toward Increasing CO₂ Emissions

Figure 8. Projected U.S. carbon dioxide emissions by sector and fuel, 1990-2025 (million metric tons)



- Burning oil remains single largest source of U.S. CO₂ emissions
- Will remain the case in 2025



Source: Energy Information Agency

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Alaska's Glacier Bay (Muir Point – Muir Inlet)



1899



2004





“Terminus” of Carroll Glacier

1906



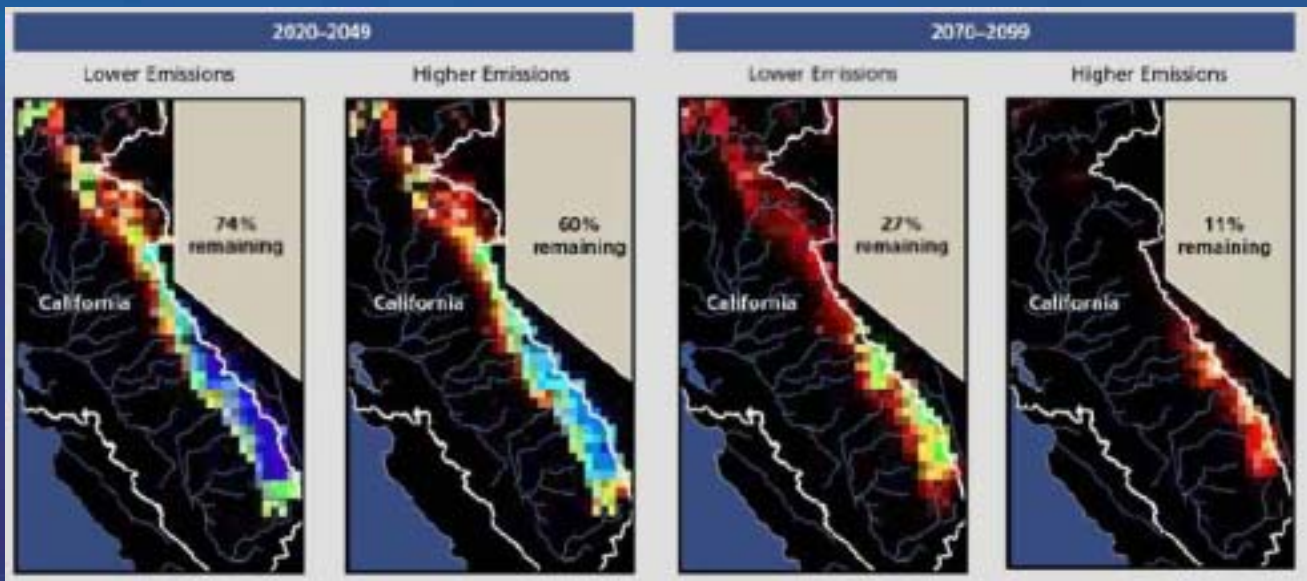
2004





Study Predicts Severe Climate Change Consequences for CA

- If current trends continue, Sierra snow pack will decline
- Multi-disciplinary study published in Proceedings of National Academy of Sciences in August 2004





What Has Changed?



Hybrid Market Booming

- Demand currently outstripping supply
- Fuel savings, tax rebates at current rates would offset incremental hybrid vehicle cost – **Wall Street Journal, October 15, 2004**
- 4 models now -- 8 models by end of 2005 -- 50 models in 2010
- “The future will be a hybrid society.” – Kazuo Okamoto, Toyota Senior Managing Director, Product Development





Hybrid Truck Users Forum (HTUF) Meeting: Kalamazoo 2004

- 250 fleet and industry attendees (45% increase over 2003)
- 14 hybrid medium- and heavy-duty trucks in ride and drive





CALSTART Secured \$1M in DOD Funding to Reduce Cost of 20+ Trucks



**International Truck and Engine
Announces Plans to Begin Limited
Commercial Production in 2006**

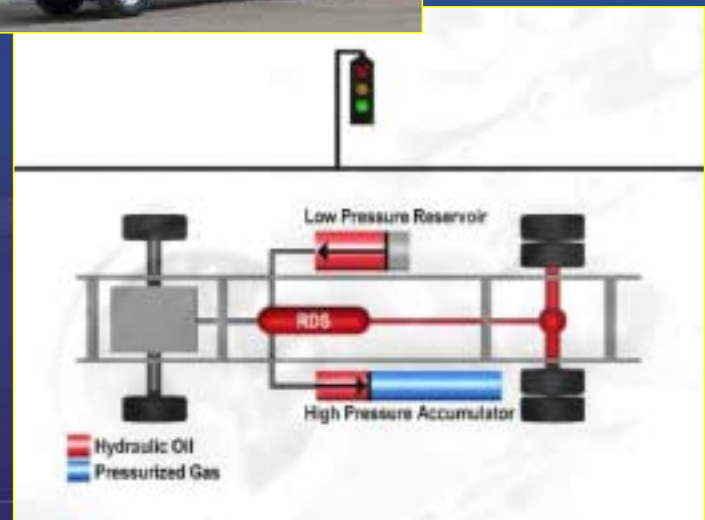


**Class 6/7
Hybrid Electric
40-60% Fuel Economy Improvement
Greatly Improved Total Emissions
Idle Reduction (shuts off at work site)
25 kW power export
Meets or exceeds driving performance requirements**

Hydraulic Hybrids Coming to Market



- Braking energy stored in high pressure accumulator
- 15-30% improvement in fuel economy
- Potentially lower cost system
- Eaton, Parker-Hannafin, and Dana all planning to introduce product
- NG Hydraulic Refuse Demo in South Coast in 2005





Mercedes Plans 50-State Diesel Engine by 2007

- Mercedes using electronic fuel injection to create cleaner, quieter, more powerful diesel engine – E320 CDI (common rail direct injection)
- Engine currently meets EPA emission standards in 45 states
- Mercedes plans further technology development in order to reach all 50 states by 2007
- Considering using SCR to address NOx by 2007





Idle Management Technology Becoming Mainstream

- Caterpillar, Freightliner, and Cummins all announced idle management products this year
 - Most typically small diesel engines providing 5-7.5 KW of power
- Truck stop electrification also growing rapidly
- 28 states have passed anti-truck idling measures



Bus Rapid Transit – Reinventing Bus Service



- Think rail – Use bus
- Better service & feel, faster delivery
- Multiple facets of BRT: dedicated bus lanes, traffic signal preemption, off-board fare collection, rail-like design
- 48 communities planning BRT systems in US – 5,000 new BRT vehicles over next 10 years
- > 50% will be alternative fuel or hybrid



EVTRIP:

e-scooters for commuters



- Several stations for new Southern California rail system have *zero or limited* parking
- Program to promote use of 2-wheel EVs for accessing transit
- Target Pasadena commuters who currently drive to a Gold Line station
- Program goal: attracting new riders at price below cost of new parking lots





CALSTART 2004 Report

California's Clean Vehicle Industry:

How the Drive to Reduce Automotive Global Warming Pollution Can Benefit the California Economy





GHG Regulation Would Spur Growth

**74 percent of
respondents**

*stated that new greenhouse
gas emission standards, such
as those required by*

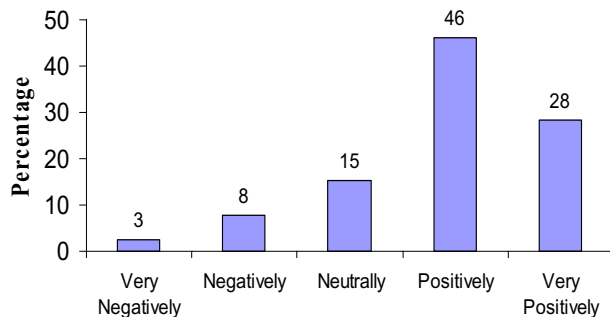
California AB 1493,
would have

**a positive to very
positive effect**

*on their respective
organization's*

**investment and hiring
in California.**

Figure 5.1 GHG-reducing Automotive Regulation's
Effect on California Investment and Hiring





New Greenhouse Gas Standards Can Help Create High Quality Jobs in California

- Past pollution programs created jobs in California to research, design, and manufacture new air pollution control equipment
 - Example: LEV II: \$550 million in additional revenues from 1999-2002

The proposed new greenhouse gas standards have potential along these same lines



Examples of Strong State Leadership and Public/Private Partnerships



European Union Transportation Energy Goals

*The EU
Supports
Portfolio
Approach*

*AB 2076
goals lower
than
Europe's*

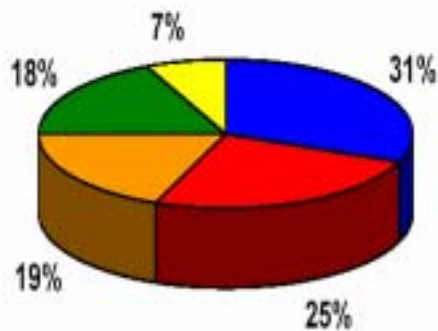
Year	Biofuel %	Naturalgas %	Hydrogen %	Total %
2005	2			2
2010	6	2		8
2015	7	5	2	14
2020	8	10	5	23

*New EC Finding: NG goal viable – H2
goal too optimistic – 2% more likely*



German NGV Program: Strong National Leadership

Natural gas supplies for Germany 2002

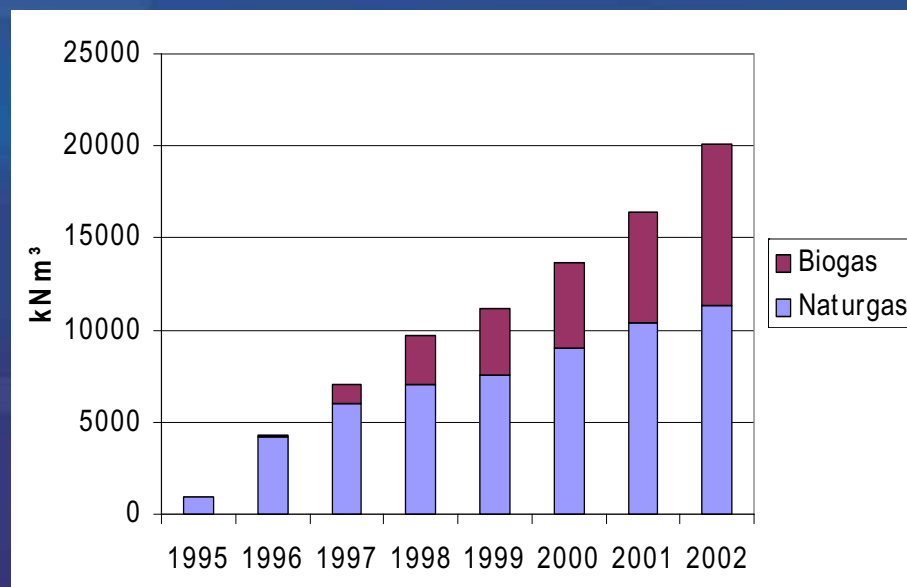


- Long-term commitment to preferential tax policy for natural gas – through 2020
- 20,000 to > 500,000 NGVs by 2018
- 1,000 new stations in next four years



NGV Fuel Sales of Biogas vs. Natural Gas in Sweden

45% of methane for Sweden's "NGVs" today is biogas and the percentage is increasing!





MN Governor Wants to Cut State Agency Oil Use by 50% by 2015



***Republican Governor
Pawlenty delivering speech
on Transportation***

- Governor Pawlenty sees tremendous potential in biofuels to reduce oil consumption
- MN already requiring 10% ethanol blend – Governor pursuing 20%
- New law also requires 2% biodiesel by July 1, 2005



We Had an Electricity Crisis – Let's Avoid A Transportation Energy Crisis

- **Lack of pro-active measures in late 1990s lead to electricity crisis**
- **Californians will be paying for the inaction at least until 2020**

CA: 1) Air Quality 2) Global Warming 3) Energy Security?



- CA has been the leader in terms of air quality and global warming
- Can it also become a leader in terms of energy security?





Why Time is Right For California First Strategy

- Higher than national average gasoline and diesel prices
- California is most vulnerable -- world's 2nd largest consumer of oil – behind only U.S. as a whole
- State hurt by electricity crisis – should avoid a transportation energy crisis
- Build on recommendations approved by two leading state agencies



What Actions Could the CEC Recommend the Legislature Take?



- The State should become a model fleet operator *tomorrow*— only purchase hybrids or alternative fuel vehicles
- Fleet rules for energy security
- Moyer program for energy security
 - Or phase in energy security criteria to Moyer program



What Actions Could the CEC Recommend the Legislature Take?



- **Parking incentives for hybrids and alternative fuel vehicles at all state garages**
 - Required in all new parking garages
 - Incentivize or require local governments to follow suit



What Actions Could the CEC Recommend the Legislature Take?



- **Revenue and weight neutral feebates**
 - Example: Fee placed on inefficient SUVs is used to pay for discount on efficient SUVs
- **Pay as You Drive Car Insurance**



What Actions Could the CEC Recommend the Legislature Take?



- **Renewable Fuel Standard**
 - 5.6% today for gasoline today
 - 10 to 20% over next five years
 - B2 to B20 potential for biodiesel
 - Strategies exist to reduce criteria emissions
- **Alternative compliance by either selling other alternative (non-renewable) fuels or buying credits from alternative fuel providers**



What Actions Could the CEC Recommend the Legislature Take?

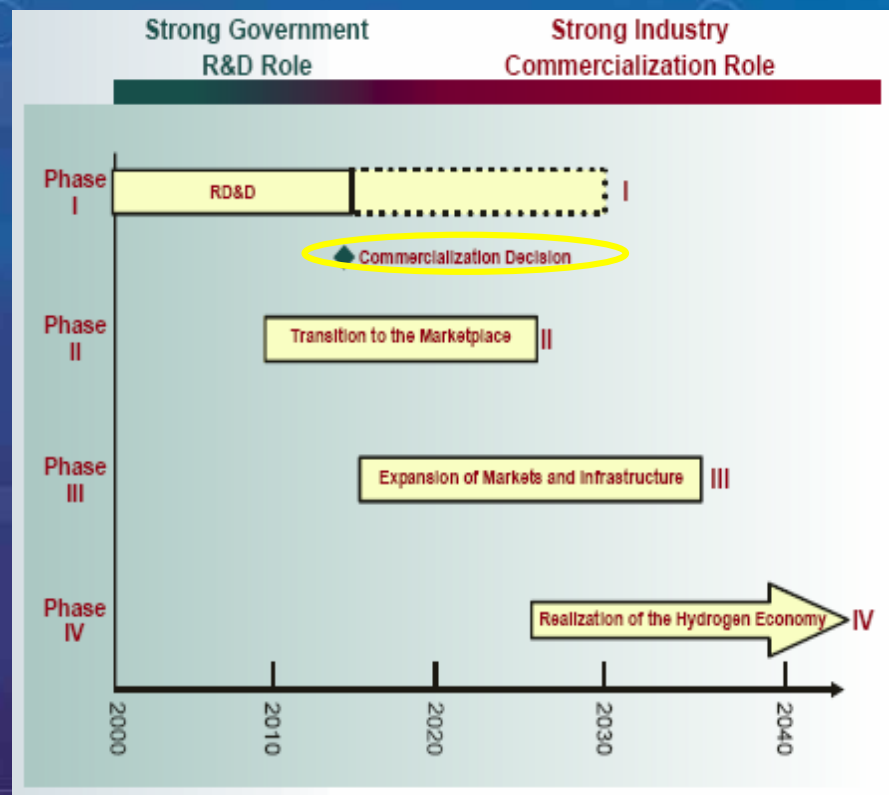


- A penny a gallon fee to incentivize the use of alternative fuels and support advanced vehicle technology research and development in California



Is Hydrogen THE Answer?

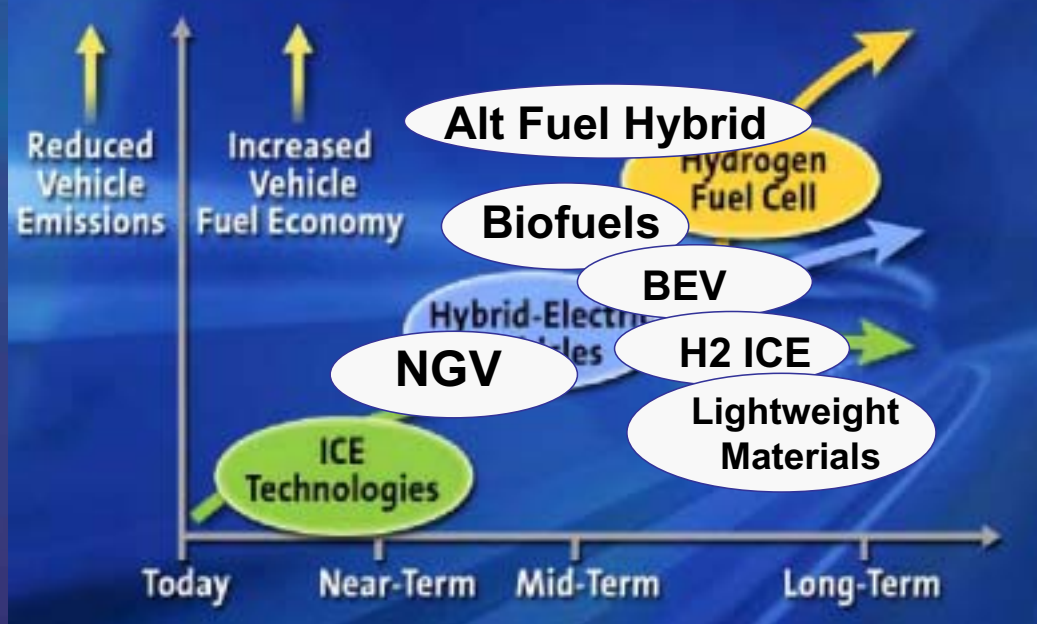
- DOE: Too many unknowns – business decision can't be made until 2015
- Oil and car companies largely in agreement with this time frame
- It's a tool in the tool kit





The Technologies and Fuels Exist

Smart Growth and Pro-Transit Policies Should Also be Part of Plan



Many Paths to the Future – Transition from Mono-fuel to Poly-fuel future



IEPR Transportation Element

- The Goals Are Great
– **It's time for action**
- When there is a fire, who do you call?
- When there is a pending transportation energy crisis, who do you call?
- If the CEC doesn't put forth a plan now, then when?



Summary

- The transportation energy challenges are real – though they may not appear immediate to some
- If we do nothing, we put our economy at risk and our environment remains seriously threatened
- Working together, we can create pro-job and pro-environment solutions that are good for the long-term future of the state

Clean Transportation SolutionsSM
Advanced Transportation TechnologiesSM



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